Introduction and Guest Background

Welcome to another episode of the Exponential Longevity Summit. I'm your host, Doctor Jeffrey Gladden, and we're here today discussing leveraging AI to outlive disease and live young for a lifetime.

And my guest today is Jason Williams, MD. He's the director of the Williams Cancer Institute. He's the author of Immunotherapy Revolution. And Jason, you and I were talking a little bit just before we got started here.

And the work you're doing is absolutely fascinating. So it's a real pleasure to welcome you to the show. Appreciate it. Thank you for having me. Yeah, absolutely.

So why don't you tell the audience a little bit about your background, maybe a little bit how you got to where you are today and kind of launch into some things related to cancer and aging?

Sure. Yeah. Yeah. So, you know, I guess the kind of the whole story, you know, when I was younger, my grandmother died of breast cancer, and I watched that naked thing as I got seen.

It seems like I'll be put away. Michelle. Mastectomy, radiation, chemo. And then she was dead in two years. And I thought, you know this, you know, is this the best that we can do.

And I was, I was like 12 years old in. And then you know of course I wasn't that much longer than I end up in college. End up the side that was like you know, really want to get into cancer, cancer research.

And for that, I got put into some programs that when I was like 2021 doing cancer research, particularly like in gene therapy, and we're working on p53 and doing all these, mouse studies and, and, we did this work where we're treating the mice with these gene therapies, injecting the tumors, getting these amazing responses.

And I saw it's like, oh, gosh, like this. This looks amazing. I think we might be onto something big. And then I kind of watched the transition over into going into the human patients.

And when they did the clinical trials and the humans they took it and they were giving the drug intravenously. And I remember asking the one of the doctors involved said here so wait a minute, I said you guys are going to give it intravenous.

But we inject in the tumor. And they said that's not how we do in humans. So we give it intravenous I said but no but we, we injected in tail vein of the mice which is like giving an intravenous.

That didn't work right. And you inject in the tumor. And so it's not going to work in humans. And they're like that's how you do it. And I well this is makes no sense.

It's that. Right. The mindset of this is how we do it, right? Yeah. In your way of thinking? Yeah. So so, you know, but here I'm, I'm, you know, I'm 20, 21, and I'm thinking, like, what do I know? I don't know.

I mean, I like I said, why do you not do it? He's like, oh, it's too hard to inject, in tumors in humans. And so I was like, okay, great. So then, you know, a couple of years later, I'm in medical school, and, interesting enough, my medical school was they're very progressive.

Cancer Research Origins and Tumor-Targeted Treatment

We we had, like, stuff. We we heard that they were really like, has doing, like, laptop computers when nobody was doing that, we were all like. And so this is, this was in like 1996. So, one of the things that they did was they had merged anatomy to be with radiology, like, say you did anatomy and readouts, sort of at the same time.

Yeah. Which makes sense. Right. And that was unique. And nobody was really doing that. No. Normally do anatomy, do radiology. So when we did that that was our first semester obviously anatomy gross anatomy.

And there was a part with interventional radiology correlating. And the guy comes in, he's like, oh yeah, I'm an individual radiologist. And this is what we do with like sticking needles and biopsies.

I was like, wait a minute. That's you you sticking some needles and tumors. And he's like, yeah. I was like, then you can inject medications in it. And he's like, I don't know.

And I think, right, get the needle on tumor. You can inject medication, right. And so originally my plan was to be an oncologist because I wanted to go into cancer and cancer research.

I said, wait a minute. No, that's the area because that's what worked. And so that's, decided that I'm going to become a radiologist. And I went that direction looking at you know, cancer treatments and hitting directly in the tumor.

That led me into a lot of ablative technologies where you stick a needle on tumor, you can freeze or in heat and destroy cancer. And we started seeing where you could do this.

And you would stimulate an immune response. So I could kill some of the patient's cancer and then the immune system attack it. But you know a lot of times that the problem is that you people do this, but they're doing it the wrong way.

I mean, they do the idea where, okay, you got a tumor, you got to kill the whole thing, and you need a margin. You need to kill a margin to that margin.

You are actually getting suppressive immune response. And so then you mess the whole thing up. So it turns out you only have part of the tumor. That was a that was what we found. Yeah.

So just the audience understands this because we were talking about this earlier. You know, when it comes to cancer, we always think about killing cancer.

We think about killing cancer cells. Right. What can we do to kill cancer cells? Yeah. And really, when you work in this field, you know, long enough you realize that killing cancer cells is only half the equation, that really, it's your immune system that ultimately, when it's young, is keeping you healthy and kind of pruning cancer cells from your body and pruning senescent cells from your body as well.

But but as you age and the immune system ages, it loses its naivete and its ability to adapt and to attack new threats, if you will. And so really, if you're going to ever control cancer, and we're going to talk about how you control aging, too.

It really comes down to the immune system, which is what you're talking about. Yeah. Yeah. I mean, it's, you know, our I think our, our approach to treat cancer was been completely wrong.

You know, cancer is a process that ages and ages of cells around it. And our treatment idea was to give it to make it older, give it chemotherapies, give radiation.

So so the concept is that it's like you have a group of people and you have this old group of people, and you want to get rid of them. So let's just give stuff to make everything older.

Right. But you don't get rid of all of it, you know, in the, in the real the way the cure and the way that's going to mutate is make it younger. You know, you make the older younger again and that's, that's and that's and that's kind of the concept and that's kind of what we found and that's what we found with with immunotherapies.

Yeah. So you know it's interesting you talk about making older. One of the things that we picked up some years

ago was that we saw a gentleman that came in with, a DNA methylation age in the urine.

So we can measure it in the blood, as you know, but we can also measure it in the urine. Yeah. And he was in his 50s, and his DNA methylation age in the urine was like 102.

Oh, we didn't know what to make of it initially, right, the first time we saw it. But ultimately we learned that that was associated with bladder cancer.

Yeah, right. This idea of it's making it older and and subsequently when we test for this, we found several other bladder cancers for people simply by doing the DNA methylation tests and showing that what comes out is like 96 and a 45 year old, or, you know, this kind of thing, which is really interesting.

So your idea that cancer is actually is kind of old cells, and now you're doing treatments like radiation and chemo that is aging a cell, if you will.

So you're making the old old and you're making the young old too. So what's the exact opposite of that. Right. Yeah. Yeah. Yeah. Just not a, not a good way to the treated.

And so yeah that's a that's that's really interesting. You guys are doing that because that's. Yeah that's definitely you know the cancers age everything around.

That's how the cancer protects itself. You know for for cancer to survive a lot of people think oh it's just the cancer itself. You're fighting just a cancer, but you're not you're fighting the immune system because the cancer has hijacked your immune system.

That's right. Cancer is now telling the immune to this part of your body. That's right. And it is. And, don't get. So then when you you try to get you're not just attacking the cancer, you're talking your your immune system is going to fight against you.

And so you have to give the signals to convert against that. And that's kind of the things that we started finding was that when we could get the immune system and said, wait a minute, no, this, but this is something we should attack.

And as a means of attacking the cancer, the immune system also start attacking old cells. And then the patients begin getting younger and that was a thing.

Yeah. So just so the audience understands that that's a that's a subtle, almost sleight of hand right there. Right. So he's using he's using drugs at this, sort of what, let's call it a cocktail of drugs to actually boost the immune system and make the immune system younger.

And that is attacking the cancer. Right. So now there may be some other therapies. Maybe he's injecting something, maybe he's doing something to make it hard for the cancer.

But ultimately, the immune system is getting younger and now cleaning out the cancer. But what he found is that it's actually making the patient younger.

At the same time, it's kind of killing the cancer, probably because it's pruning senescent cells in part.

Immune System, Aging, and Reprogramming

But, do you want to talk about that? Because that's that's yeah, really, really cool stuff. That was, you know, that was, you know, amazing and surprised.

I mean, because obviously my main focus on cancer, I want to I want to cure cancer. I, I aging certainly was an interest in and and I kept finding myself sort of crossing over with the aging stuff.

But, you know, it's really worried about cancer. And then here we are treating cancer patients, and yet we're starting to see things that look like the patients are, you know, they're first are telling us, you know, because a patient or say, hey, you know, I feel like I'm 25 again in a, in a if when they first started telling me this at that, I think it just because they felt so bad and now they're feeling better that they didn't realize.

And so they think they feel like they're 25. Right. It's all relative, right? Yeah. Exactly. You. But they can really feel like they're 25 and think, but but then you start looking at their scans and you know, I look, I'm a radiologist.

You can show me a scan. I can tell you that person's all that person's young. I mean, you can look at the differences, right? Right. Yeah. I mean, you will see the changes.

And I started seeing the scans. The patients bodies are looking younger. You know, and I said, that's really interesting. Then you start seeing, wait a minute that there's disc or degenerative.

And now they're increasing in height. That is stuff that should not happen right. So then I was like, oh wait, something something's going on here. You know, we're treating the cancer.

And yet simultaneously you're making the patient younger. Yeah. And then I think you, as you were talking about, you had some conversations. You know, David Sinclair published a paper, where previous that had been shown that using these Yamanaka factors, these gene factors for factors in the cell, that you could actually make a cell young again, you could actually start to revert it back.

And in fact, if you kept the Yamanaka factors activated, you could take it all the way back to a pluripotent stem cell. Right? It would lose its identification as a heart cell or a muscle cell or whatever else.

And then David Sinclair came out with a paper. His phone was about two years ago now, where he was using five different chemicals to actually do the same thing that the Yamanaka factors were.

Tell us a little about a conversation you had with David and and how you bridged off that. Yeah. And I discussed with David because interesting. Because so, you know, obviously the real question is like, why do we age, you know, and Davidson clear has this theory, you know, because information theory of aging we're basically the data is all there.

But, you know, it gets corrupted, you know gets methylated. You're not seeing it. Right. And, you know, and if you could revert back to a prior setting, you would be younger again. And that's in adult.

That makes complete sense, actually. I mean, I think I think it's genius and I think I think he's partially right on that. And I looked at it, but then when I looked at the agents that he's using these agents or some of the same agents that we use, like off label, you know, valproic acid, you know, you know, channels hyper mean, which is normal.

I, sodium butyrate, which is, which is, you know, found in the microbiome a lot. We it was obviously with some we do fecal transplants and things like that to help the cancer patients.

And you can do fecal transplants to make people younger as well. And so you know that that was that was interesting. And then and for Scotland, which is which is, you know, a root herb that has several effects on the immune system as well.

And he was shown obviously these things were activating the genes. But then also you look and say, well, there, there but there are immunotherapies. And so what we saw on our side and this why it led me to realize it is more the immune system than the genes, was that I could replace some of his agents with other agents that don't affect the genes, and they still get younger and interesting.

Yeah. So I didn't have a. Because what you did, I think you mapped what he was giving back to the back to the gene. But then what that gene was doing like it's elevating TGF beta.

And so you can block that block the gene is making TGF beta. Or you can just block TGF beta. So for example. That's that's right I mean there's there's several ways that you can achieve the same, same, you know, you know in result.

And that's yeah, that's kind of it's this was funny because he had found that okay. You could you could have, they could replace them with other agents and you could also, you could use other immunotherapy agents and boost the response more than what you would see with just the chemical reprograming factors that he discussed.

Right. Start adding on agents like we we have an agent experimentally that work with is called an anti CD 47 now and CD 47 is a don't eat me signal to the macrophage that is expressed by senescent cells to keep them phages from not eating them.

And so it's also expressed by cancers. Now what happens when we do it in cancer treatment. If you do this heavily, systemically you will start knocking off some of the patient's platelets and red blood cells because you'll you'll make them like, you know, normally that what happens when there's age, right.

They kind of I think they accumulate these complement type proteins and like barnacles on a ship and eventually there's too much in there. Take it out, you know, by the means and by the spleen, and they will start knocking them off early.

So then you drop the person's hemoglobin and you drop your platelets, like, faster than you expect if you get stuck. Yeah. Yeah. So you can use it. It's a it's a great agent, but that was the thing that they found in a lot of the studies using it systemically at higher doses.

You know, you had sort of that toxicity to it. We don't we don't use it that way. We use it in the tumor. So we don't have those issues. We're just killing locally.

So we don't have those those side effects. It. That's your anti CD 47 you're injecting into the tumor. Is that what you're saying. That's that's that's an agent that that we work with a lot.

And it's it's it's a great great agent and and it's anti-aging. And then there so then we were seeing this we're seeing this anti-aging and you know, and I was wondering, gosh, what's the C-47 doing?

And then later there was a study that somebody did where they showed if they injected antacid 47 into muscle, they made the muscle younger. So so it's a, you know, it's an it's certainly an agent.

I mean, you know, you've got that I mean, then you've got, you know, a lot with TGF beta. So too much TGF beta know is problematic. And then and then you start looking at the cytokines, you know, and there are certain cytokine panels that are associated with aging.

You know elevated one. IL 11 111 is a big topic right. Now. 11 six you know, all those are in, you know. And so you can look at now, one is I can tell you that IL one I think is a big driver.

I think if you knock down I'll one you'll actually start seeing your IL six and I'll 11 come down right. Without directly treating them directly. And there is an FDA approved drug that inhibits I one called Anna Kira.

Anti-Aging Protocols, Dosing, and Personal Results

Can red. And so and it's interesting when you look at that drug it has been FDA approved since 2001. And you think, well why, you know what? Why didn't I use more?

I mean, approved for rheumatoid arthritis, but it's not the main drug used for rheumatoid arthritis. And then when you look at the data behind it, you know, it was the only drug to show that reverse erosive change.

Is it reversed the arthritis really? Why did they not use that more? I have no idea. I mean, it's expensive. I mean,

doesn't necessarily a drawback, but all the all this biologic agents are expensive.

So I'm not sure that some of the others are that are not any better. I mean, they're probably not as good, you know, why would you not using a kindra?

I think it so. So you're coming across this realization and then tell us a little bit about you and your mom. Yeah. So you started doing some of these, taking some of these drugs yourself to sort of figure a few things out.

And then I know your mom got involved with this, too, so just walk us through that a little bit, if you would. Yeah. So, I mean, one thing is that, you know, my my mom, she really hated getting older.

I mean, she's basically, like, 79, almost 80. And so, she just really didn't like it, and it was really just getting her down and depressed and, and, you know, I felt like I needed to try to do something about it.

I knew that I want to do something about aging. And I was afraid that if I didn't do something faster would be too late for her. Yeah. So as I started putting these things together, I was like, okay, look, I think I'm getting enough that I can move forward.

And I had the discussion with my mom. She's like, look, she's like, have you got stuff that makes people younger? I'll try it. I'll be the guinea pig.

And then it's just like, okay, I'll do it. But I was like, no, but I don't, I don't want to do something unknown on my mom. And. Right, I mean, how am I going to live with myself if there's a problem?

So I was like, you know what? I'm going to do it myself. Okay. And and the other thing is that I needed to adjust dosing because there were some unknowns on how you would do the dosing.

And for me, the better way to do it was to do it and to feel it and experience. That's right. I'm on the pointy end of the stick too. I call it. You know, I'm not going to recommend anything to somebody.

I haven't tried myself. So. Yeah. So that's what I had. So I had to do it and tweak it and that's what I did was, you know, I did it and started figuring out dosing, trying different dosing, trying different ways.

You know, this dosing regimen, this mixture, these are the things and you know, and and we're still I'm still playing with it I mean I'm still you know I found stuff that works.

But I'm still refining all the different regimen and, and playing around with and doing so. Also you do find it changes like so for me, when I first started taking it and there was definitely a different as I said, as I saw and figured out that I put my mom on it.

And then, of course, you know, we're seeing the changes in my mom. You know, we measure of our spine showing that we're we're jittering her disc. She clearly she's looking younger.

She feels younger. She's getting all or I think. Right. And you should see this is where. All our potatoes versus, Yeah, amazing, amazing stuff. And so then.

Yeah, so I, you know, decided, well, okay, you know, I got her on this region and then I kept kind of tweaking and playing with it myself and figuring out, you know, the different versions.

But the one thing I saw was that, like, for her, she could tolerate in some ways to take it almost more than I could, for my immune system was younger and stronger.

So for me, it came in and that was like strong because as she she's like, I can take it like three days straight, no problem. I say, well, for me it's, it's it's intense because you feel your skin getting tight.

I mean, you feel like the changes, the turnover on your hands, like the skin, you know, we'll start peeling like faster. It's like becoming like, okay.

Like that's a little too fast. It's getting a little sensitive. But you also, you're amazed at the things that you didn't realize that as you got older, or change it through your sensitivity or your skin much greater.

You know, obviously my vision, my my close vision, you know, had gone out. Come back, I can see I can see up close again. I mean, I still sometimes need glasses, but, before I always needed glasses.

You know, was a problem because, like, obviously, like I did interventional procedures and seeing the needles and stuff like that, I started noticing I was getting about 46.

It just kind of hit me suddenly. And then, you know, when you have some cataract, a little bit cataract formation, because that's what happens. It's like early cataract.

Yeah. That's, that's that's fixing, your hair starts growing like crazy. I mean, I mean, I mean, you can almost feel your hair growing. Wow. That is weird. It's, you know.

It's really fascinating, right? And just so that your audience understands this is not this is not a try it at home kind of thing, because, Jason's looking at this through several sophisticated lenses.

One is the dosing of the different, components. One is the different components that go into the cocktail, and then the other is, you know, how many days do you take it for before you take a break?

One, two, three days. And so even in cancer patients, they may take it for, for a course, let's call it, and then they may stop and do it again, whatever.

And, and he was explaining to me that some of these people, nine months later, is when their cancer starts to really go away. So this is a very, you know, sort of black box in terms of exactly how to get it right.

So just don't start playing with valproic acid, right? Right. That's it. Yeah. Yeah, I know, I mean, you know, obviously, you need you need, you need help on this and, you know, I think there's a lot of stuff that we're going to try and, you know, obviously, Thank you.

You're not together. Work on this stuff to try to refine and, you know, get this to patients. You know, that that way we have, like, the, you know, the better on the dosing and and stuff like that and the regimens because I think the patients need to be followed and because it's not the same.

I mean, male patients are different than females. I mean, there's like, you know. To us because we know that men are different, they're women. But how are they how do they respond differently?

Cytokines are different on that. I know a little bit. So because, you know, my wife is taking the regimens. Okay. You know, of, So they want your sensitive, less sensitive.

Or more sensitive. So my, my, my, my wife is younger and she's, she's a little bit more slightly autoimmune prone. So it doesn't really generate typical autoimmunity.

It's weird because like it's it's like a different type of response. It's more like an innate response. It's not like the full out antibody attack hyper response.

But but you can see like the sensitivity in her. And so you her you have to adjust the dosing back. I mean you have to like all right. Keep it keep it less.

And so it's it's variable for for many people. Well you know, that's an interesting thing because when we think about making the immune system younger, one of the things we think about is actually balancing the immune system.

Right. And in other words, here as people have insults or genetic predispositions or, you know, exogenous inflammation or whatever, it can activate autoimmunity where the antibodies, the body's actually now reacting against its own tissues. Right.

Right. And, you know, we can do certain drugs to try to bring that into into control or to modulate it back. And then there are things you can do to suppress the immune system.

But here we're talking about rebuilding the immune system. So the question is if you're rebuilding it, does it come back into balance or is there is there less tendency for autoimmunity or more tendency or what?

Yeah, that's a good question. And I'm trying to really figure figure that out.

Future of Cancer Care and Longevity Medicine

I'm not I'm not sure if we know yet really that, there's definitely going to be less tendency for diseases that you would normally see of aging. Right.

The genotypes I mean, so again, like obviously, you know, like type two diabetes, probably coronary disease. Yeah. I've seen, Alzheimer's, Parkinson's, probably all those type of things you would see less frequently of, you know, you're going to see stuff that you would only see.

I mean, it makes it makes a person younger. So younger people don't usually have those problems. Right. And whereas younger people certainly can have some autoimmune issues, you know, as well.

But but I do think that this in some way seems to fix some of these problems. It's strange, you think that it might would aggravate them, but actually seems like it makes it better.

I know coming out of from our angle. Right. Which is kind of the longevity medicine, functional medicine, combined therapy, many times we're able to kind of get to the root cause of why somebody has autoimmunity and kind of fix the stimulants that are kind of triggering the immune system to go that direction, which may be nice when you have people that have a history of autoimmunity or active autoimmunity to kind of include what we're doing to kind of lay that more to rest so you can come forward with the other stuff, and not not sort of activate it.

Yeah, I think, I think certainly the gut microbiome huge aspect. Yeah. It and it's funny because like for terrorists, I mean, because we do this our cancer patients like our cancer patients, we do, you know, fecal transplants.

We use what's, what's called rebote. Rebote is FDA approved for C diff, obviously off label for cancer. But we use it and it's amazing. We see just using rebote, that patients cancers will improve because it improves the immune response.

And so that was some of the things that when I was doing this and also and also doing like with, with my, with my wife as well, I did Rebote she did Rebote a I mean, we were doing like all the things.

So like when we do there's kind of different ways you can do the protocol. Like so for me, when I do, I'm doing like the maximum. I'm doing all the different things.

Like my mom, she's doing a lot, but maybe slightly less level. And then we have a few other people who are doing parts of it, and they're doing even MLS, and they see improvement, but a much lower level.

Got it. Yeah. So it is probably dose dependent to some extent. Well, I'm excited to jump in on this with you. We're we're excited to work on it and and see what we can do.

But Jason, it's, it's amazing work you're doing. I think the audiences probably found this conversation fascinating. Quite honestly. So you're think of it this way.

You know, two of the things that you're most dreading in life getting old and potentially getting cancer. You're kind of killing two birds with one stone here.

Right. And so and, and even heart disease and dementia and some other things. Right. So the whole degenerative side of this. Yeah. It's a it's amazing.

I mean, I think, you know, in the future what we're going to see is a few things. One, we're going to see a population where everybody's in a younger state, everybody's, you know, basically basically between the age of 20, 25 to 40.

Yeah. You know, you would want to stay in that age where your risk of death is less. I mean, so the thing that in that realm and, you know, so you can see a lot less of other main problems of diabetes, heart disease, things like that.

I think, you know, I think the future for cancer treatment one with this, I think we'll see a lot less incidence of cancer because we're going to keep people young.

So the cancer cells will go down. And the other is that in the future for cancer is that we know we should not be. That really like cutting on these cancers, disturbing them too much.

I mean, even biopsy, if you're going to prefer me if you're going to biopsy you need to treat. So if you identify a person and say this person highly suspicious for cancer, let's go in.

We can sample it then. But we're going to go ahead and treat. We're not going to biopsy. And then I'll come back 2 or 3 weeks later. Right now we've we've inflamed your cancer.

Right. And so now your risk of metastatic disease is higher. So you know that that we're doing it wrong. I mean we're we we need to change how we do this.

Well, I think I think it's really enlightening. I think there is a new paradigm of medicine coming for sure. And I think we are really going to be able to live young for a lifetime leveraging technologies like this.

So really, again, congratulations on all you're doing. Such a pleasure to have this conversation with you, Jason. Thanks so much. Thank you I appreciate it.

We get talking with you. Yeah.